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THE
SEWANEE REVIEW

Vol. XVII.] JANUARY, 1909. [No. 1.

IS SCIENCE FINAL?

We suppose that every one makes the effort to adjust himself in such a way to the prevalent thought of his period as to be reasonably comfortable and at home in it. To be in permanent antagonism with one's neighbor, or, more forcibly, to have a veritable quarrel on hand between our intellectual lungs and the atmosphere which these are obliged to breathe, is a position neither tenable nor creditable. Fortunately, there are usually two camps, more or less actively hostile, each one of which arrogates to itself the dominant influence of the age, and in either one of which we can be soothed to more or less adequate acceptance of life under the conditions in which it ordinarily presents itself. Every now and then, however, we find ourselves rather rudely awakened from the peacefulness into which we had fallen, and the trouble begins anew. The suspicion is at last aroused that both contestants are more or less in the wrong, and that a composition of differences is possible. This article will not attempt such a composition, but will rather try to subject some positions widely accepted to a scrutiny for which they constantly call, but which nevertheless they seem very loathe to make.

We recognize the tendency of thought to run to extremes; it has all the courage that anything possesses, and it is not satisfied until it has reached the last conclusions which its premises either justify, or do not justify; for apparently a start fairly made in the direction of the illogical bounds toward the limit with as much alacrity as if the last clouds of doubt had vanished and the sun of truth had fairly arisen.

Thought swings between opposites like a pendulum between the extremes of the arc which it describes. During the earlier years of the nineteenth century the great idealistic movement in Germany, reflected in this country in the writings of the so-called transcendentalists, penetrated all effort, literary, scientific, philosophic. Schelling attempted an idealistic construction of Nature, and we can read echoes of it in Emerson's poems and Thoreau's essays. Carlyle was set on fire by the moral enthusiasm of Fichte and measured modern life by a standard which in his inflexible application that life could but very unsatisfactorily bear.

Now all that has been changed. The idealist remains and utters his message at intervals but he is heard with some impatience. He appears to belong to a preceding generation and the new comers who hold the territory have for him that sort of half-humorous consideration which we grant to one who has done well within his opportunity, but who is now hopelessly behind the age.

The scientist has taken possession and he tries to make it very clear that his occupancy is permanent. He is constantly widening his scope, and endeavoring more and more to bring into his domain subjects over which it would seem that he has little reason to claim jurisdiction. He is rapidly obliterating the old land-marks, and ignoring distinctions which one had supposed especially in need of explanation. The feud between mind and matter is again settled, and definitely, in favor of matter. What the innumerable caravan of fresh discoveries may eventually turn out to be no one can predict, but thus far intellectually they have only succeeded in increasing the number of those who wrap their cloaks around them and join the multitudinous and admirable army of the dead. The fact, however, remains; the methods of the scientist are dominant; things imponderable and unmeasurable are subject to the scales and the yard-stick; and many an airy nothing is finding itself in a local habitation, and with a name, of which it never even most remotely dreamed.

The theologian has been accused, rightfully or wrongfully, of a good deal of confidence in his own view of the world, and a plentiful lack of consideration for the opinions of others. He has been credited with much arrogance in his assumption of exclusive admission into the counsels of the Infinite, and a wholesome abhorrence of any unwarranted intrusion upon his domains. We have all heard of the *furor* or *rancor theologicus*, and perhaps have not been without some practical experiences of its extent and vigor. The scientist has complained bitterly of any attempt to infringe on his freedom of investigation, and has had some rather tremendous things to say about the indispensable liberty of genuine research, and the need of approaching a subject without vitiating prejudgments. The demand for liberty, however, ought strictly to be a universal one; if a man asks for liberty for himself, he should be willing to grant the same immunity from needless restrictions to all other men. This the emancipated scientist has not always been willing to do, and he has developed a very formidable *furor* or *rancor scientificus* on his own account. Throughout the scientific writings, there is a pervasive but urbane smile, as it were, at the unfortunate beings who are unwilling to believe that the last word has been said by the very shallowest school of English or Continental empiricists.

The scientist demands that one shall not only accept his conclusions, but accept them also in the way in which he accepts them. One must take him all in all, or not at all. Thus with his favorite device of evolution. He has only recently discovered that some doctrine of evolution is at least as old as the Greeks, and for aught he can tell to the contrary, may have been the method employed by our famous progenitor in the naming of earth's multifarious creatures as they passed before him. It has been taken for granted that everything has been evolved — the marks of growth and transition are impressed upon the world and all worlds — that the nebulæ scattered across the infinite blackness, when properly inspected, will show themselves in various stages of progress and decay — that all history will present itself, when the requisite tests are applied, as starting from nowhere and going nowhither.

The great god, Chance, presided at the beginning, has controlled the varying stages of the movement, and will properly assist at the obsequies. The subtle mathematical calculations as to what the probabilities are of a number of disrelated atoms combining into orderly and persistent groups have been many and curious.

The solution has remained somewhat obscure, and has found at certain points some really surprising difficulties, such as the transformation of the mechanical into the vital, or the conversion of a number of nervous thrills into a fully-equipped and self-recognizing consciousness.

However, things must present some elements of stabilty; explanation would find itself in a curious predicament if the results of to-day only sufficed for their complete overthrow to-morrow. Evolution as an adequate and satisfactory account of the phenomena with which it deals, cannot in itself be subject to a constant evolution, for such a hypothesis would render it wholly useless, either as an instrument of investigation or a statement of conclusions. We shall have to be able to plant our feet firmly somewhere at last if we expect really to know anything, or to act intelligently from such knowledge. In other words, the law of progress must be a permanent one, or the achievements of to-day will be ruthlessly swept away overnight. Evolution itself, therefore, is based upon a deeper and larger reality, and this deeper and larger reality cannot be thought as a growth or as something changeable. It has always been, and it will always be. It can in no sense be said to have been evolved; we are confronted with a double series of facts, with one that is stable, actual, permanent, and with another that is fluctuating, developing, growing. Evolution, therefore, is strictly based upon that which is not evolved at all; it cannot be regarded as a universal statement of what is in the world; it is only a small fraction, a part of a greater whole, which encircles it, which overrules it, which gives it such efficacy and such place as it has.

The scientific method has several favorite devices for the surmounting of difficulties. One of these is to throw the fact to be explained into a remote antiquity whither the oldest memory of man has small access, and to allow for the passage of immense periods of time for the bringing about of results. It is indeed remarkable to discover how much is known about the habits and manner of life of the prehistoric man, whose existence is not always as certain as the things he assuredly did. Should it even be proved that a certain phase of development had no actual foundation, it can always be slipped into the series as a link which the logic of the situation requires. That affairs must have transpired in the dim hoary distance which were wholly different from the ones which we see proceeding under our eyes, is taken for granted, and astonishing transformations are readily admissible in the haze of the void and abysm of time. The ease, too, with which important elements of the problem can be lost sight of in the weltering waste of years, the simplifying of matters otherwise troublesome, deserves to be taken into account and duly considered.

Another device of the scientific method is the minimising of differences by regarding them as made up of fine and insensible gradations. The inorganic shades off by exquisite degrees into the organic, and the unconscious passes by very subtile steps into the conscious. The supposition seems to be that if a distinction is reduced to a scarcely appreciable quantity, it need no longer be seriously considered and indeed may be wholly dropped out as not influential. In such ways it is easy enough to demonstrate that everything is mechanical, and that matter, so-called, contains the promise and potency of the highest possible to all thought. When we, however, begin to ask ourselves what matter is, we meet with a dual process. From one aspect it appears as the ultimate abstraction, emptied of all qualities and hardly susceptible of definition. It can as little be called inorganic as organic, for the one is as dependent upon it for subsistence as the other. It cannot be called a simple or a compound, for these are thinkable only in relation to one another. We may take the desperate Spencerian leap in the dark, and call it a form of the Unknowable, but it cannot be a form at all, and we are then further obliged to ask ourselves what is the Unknowable. This last is assuredly the strangest contradiction in terms that ever the mind of man puzzled itself withal. To call it the Unknowable is to know something about it, and so it ceases to be the Unknowable. To find in it the source of anything or the explanation of anything, is to bring it out of its worse than Cimmerian gloom and make it deny its own nature. It is the sheerest superfluity in any system of thought, for it adds nothing, helps nothing, in fact is the pure nothingness itself. To write marvellous hymns of praise in prose or rhyme about the Unknowable, is to indulge in a mysticism beside which the rhapsodies of the Oriental metaphysicians are as clear as the latest novel of Mr. Howells, or racy as Mr. Kipling's adventures in the depths of the Asiatic jungle. It is thus, indeed, that science in its unconsciousness of the thought processes which dominate it becomes wholly alien to itself, and proceeds along a route for which it has always expressed the utmost abhorrence.

In the other aspect of matter we reverse the process of abstraction, and by adding to it characteristic after characteristic, make it indeed the potency out of which may come all manner of efflorescence. We may go so far as to call it 'mind-stuff,' and give to every particle a sort of rudimentary consciousness, which, thrown into suitable conditions, may develop into a foolish jelly-fish, or rise to the dignity of creating Victor Hugo's "Legend of the Ages." It may be a question, however, whether the term, 'matter,' is any longer applicable to a reality which contains attributes, and has in it every property of everything ready to be produced whenever it is called upon. It has become the scientist's magical purse, always full to the brim with the coins of all lands, and never lacking in the small change which the special occasion requires. One interesting fact, however, to be observed here, is the kind of oscillating thinking in which there is so free an indulgence. At first we have a continuous abstraction which leaves us in the presence of the Unknowable, and then we have a concreting which terminates where the scientist is a little loath to go. The atomic theory affords no secure halting place; attempts to define the atom present us anew with the difficulties enumerated above. The atom is either stripped of all attributes, and then one atom is wholly indistinguishable from another, and the sum of these zeros can hardly be said to make up a calculable quantity, or the atom becomes a monad with an undeveloped mind, and the whole resurgence is taken for granted in the original terms. To be sure, the atomic theory is said to be only a working hypothesis, so-called, apparently, because it can be made to work both ways with equal facility. In the seclusion of the laboratory, and face to face with the expert in the same field, the hypothesis may be admitted as only a convenient form of statement of certain appearances and coincidences and regularities, which have been always observed to take place under given circumstances; but in the heat of popular discussion, and before minds ready to accept results without the knowledge for their independent exploration, the hypothesis rapidly assumes the form and authority of established truth, and the pageant of the world emerging out of and passing into the Unknowable or the Nought makes assuredly an imposing spectacle.

The rise of differences and the transitions from plane to plane of experimental knowledge urgently demand explanation. The passage from the inorganic to the organic, from the organic to the conscious, from the conscious to the spiritual, are among the vexed questions with which science busies itself. The more conservative scientists admit that some of these questions are not solvable by their methods, and indeed are not within the domain of science; inasmuch, however, as these are inclined to think that attempts to answer them are bound to fail, and inasmuch as others present answers which leave out of sight the most important elements, one is left in a dilemma, on either horn of which impalement is peculiarly excruciating. We are obliged to admit on the one hand that we are begirt by a perfect wilderness of contradictions, which becomes more thorny and disastrous the deeper we penetrate it; the opening chapters of Spencer's "First Principles" show us into what a maze of difficulties we rush, unless we are willing to accept his view of the relativity of all knowledge; the first parts of Lotze's "Microcosmus" plunge us into a similar jungle of impassable metaphysical conceptions. It may be supposed that the very thought which so magnificently shows up the two sides of the antithesis, spans them both, and therefore is itself their unity and solution. Failing to see this, we are forced to accept the mechanical theory of the world with all its consequences, and in doing so to obliterate the very things with which we began, and of which we attempted to give a satisfactory account. When we accept, moreover, the scientific answer, we do not find the peace and comfort which we anticipated. Instead of a delicious harmony, we discover the usual discord, not resolved into the cognate concord. The development theory, whose triumph some years ago we voiced with a fervor that was resonant as a Pindaric ode, seems to-day less assured of itself, and certainly is undergoing transformations which its designers did not expect. It appears that other factors must be introduced beside the transition of the homogeneous into the heterogeneous, or the struggle for the survival of the fittest, or the love affairs of the multitudinous creatures, or the inheritance of derived peculiarities, or the successful hiding from the assaults of enemies, or the affection for bright or sombre colorings. Professor Drummond introduces the altruistic factor into the whole selfish carnival, and in so doing opens the door into an entire new world of possibilities and likelihoods. The last word in evolution has not been said by any means, and Darwinism and the others are on the eve of a metamorphosis more radical than any that they were called into being to explain.

When one enters higher spheres the same tendency to deprive the phenomena to be explained of their salient peculiarities appears even more strongly. What mind is in the usual development theory, would be a rather difficult thing to say, but in many of these solutions the essence of mind is first despoiled of what especially constitutes its mind, and then the reduction to merely mechanical factors becomes very easy. It is true that the characteristics thus dropped out are afterwards re-introduced and discussed, but there is a singular unconscious ness that such re-introduction has in a large measure vitiated the theory to be defended. Mr. Herbert Spencer identifies mind with motion, and on account of that considers himself more an idealist than Hegel or Plato, because these last, he thinks, presuppose some sort of refined material out of which minds are made, different wholly from matter, so-called. His reduction of both matter and motion into forms of the Unknowable contains so many contradictions that it would fill the rest of this article to elucidate even a part of them. But it must be admitted that if mind be motion, it is certainly a very different sort of motion from the kind about which we ordinarily talk. Fichte showed that mind necessarily involved two series, the one of simple apprehension, and the other of recognition of the apprehensible series, and the fact to be explained, therefore, is the presence of both series and their relation to each other. It was Aristotle who showed that the concrete can never be explained by the abstract, and the attempt to reduce all mind to the merely sensuous involves at every step the begging of the whole question, for the new and more concrete factors are constantly slipped in surreptitiously and without warrant. So with the notion of mind and matter being two aspects of the same substance. Of course, the whole point is to know the substance which thus presents itself in two contradictory aspects; an unextended aspect, consciousness, and an extended one, body. Simply to say that these are two aspects of one subtance is merely to reproduce the original question in a new form of words, and to make that new form more hopelessly tangled than the old. For how to unite the extended and the unextended in the same thing — for that is precisely what is meant — remains yet an affair not very clear; indeed, that the same thing should be at the same time and in the same sense both extended and unextended, is one of those conceptions which only a ghostly terror of the genuinely metaphysical, belonging to some forms of modern speculation, could have produced.

When we enter the field of scientific ethics, we meet with the same difficulties over again. The ethical ideal is at once made to conform to the procrustean bed of the sensuous hypothesis. The affirmation is constantly made that nothing can be in the mind except what it has received from without; indeed, the very constitution of the mind itself appears to be a gift from the environment. There has always been considerable difficulty in the attempt to state how the evolutionary process unfolds itself into an internality which re-acts upon the evolutionary process itself as external to it, for all mind does precisely this. Passing over the point with the ease which usually characterizes the abstract development theory, we can readily see that the reactions of mind upon its source, the environment, will take the form of conduct or morals. The mind, however, can form no ideas of conduct of its own motion; ideals of conduct are only abstractions from the effects brought about in it by the world around it. Under these conditions, what will be the forms which conduct must assume? In the first place, there ought to be harmony between the mind and its environment. This is practically the happiness conception. When we and the world around us are at one, we shall receive the maximum amount of pleasure, and pleasure, of course, is something in itself desirable. This last is to be taken for granted without further demonstration. There have been martyrdoms all down the course of history, but they may, on the whole, be safely left out of the count. Pleasure, however, is pretty sure to be individual; the relation of one person to the environment differs materially from that of every other one; so that the search for pleasure must mean the search for one's own good. At least that is an inevitable aspect of it. In the second place, however, pleasures conflict, and if this conflict be allowed to go too far, the pleasure of every one will be destroyed, and the potent environment will have been wholly thwarted in its philanthropic intentions. We shall be obliged, therefore, to introduce a reverse tendency; we shall be obliged to find in the environment a potency compelling us to be good to others, so far as it does not conflict with the good of ourselves, or we shall be permitted to do only those things which are not hurtful to other men. The reconciliation of these opposite movements presents a great many difficulties, and the environment is put to sad straits to go both ways at once. The solution seems to be that the environment seeks the good of all; this good can, in the nature of the case, only be a compromise; and when the environment has brought to pass the compromise first, and then the acquiescence of every one in the compromise, the moral status of the world may be considered complete, and the amount of happiness will be the greatest possible. One may ask oneself whether the result be worth the effort, whether the sacrifice one is obliged to make for the end held out is not greater than the latter deserves, whether anything short of the whole of goodness and the whole of realization is worthy the search and attainment of the simplest soul that ever found in itself a hope and longing that transcended any and every environment, that was more than all the worlds and all the heavens, that so exceeded all externality that it could never have sprung from it, and that was a completion which, the more it was shared with others, the more it enlarged and deepened and ennobled.

The considerations so imperfectly given above lead to several conclusions. They are not to be interpreted into hostility either to science or the evolution theory in themselves. They indicate, however, that a full and satisfactory account of the true and genuine methods of science, and the limits within which these methods are adequate and valid, is a desideratum. Science has altogether been proceeding without a sufficient reflection upon itself, its nature, and the range of its results. With an adequate understanding of its true field and the character of the methods which should govern its procedure, Science will rest satisfied with the results legitimately hers, and cease arrogating to herself the ownership of the entire territory. She will also recognize the true significance of the development theory, accept the presence of factors which she has been inclined to deny, and discover that evolution is but half the truth of which involution is the other half. She will also be ready to admit that, because her methods everywhere strike against evident boundaries, that is no reason for saying that a passage beyond those boundaries is wholly impossible to intelligence, and that beyond the results which she achieves there is only that dreary and barren 'no-territory' which so many are so unreasonably fond of under the misnomer of the Unknowable.

The achievements of science are among the things that most deserve our gratitude; the evolution theory must be understood and its full import allowed for; but the transcendent heritage left by the great thinkers of the past are not therefore ruthlessly to be cast aside, and the intelligence narrowed down to what is after all only one field of its exercise, and that by no means its most important or emancipating one.

Every science has at its centre a principle or group of principles which give it unity, and which enable it to deal with the infinite particulars of its subject matter. These principles also, and the organization of the science effected by them, constitute the basis of the differentiation of one science from another, and the reason for the uniting of all sciences in a consistent whole of knowledge. These principles cannot themselves be derived from any simple combination or manipulation of the data of the science itself, nor can the ordinary methods by which the science reaches its results be made applicable to them. The attempt to do this very thing results in discovering insoluble contradictions everywhere. It is in just this way that we are brought to the unsatisfactory conclusion that the mind of man can go only a very little distance, and then it knocks its metaphysical head against an impassable stone wall, and irrationally determines that everything depends on some inexplicable mystery on the other side. If, again, these fundamental principles are said to be derived by abstraction from the given facts, we find ourselves in the presence of fixed and sterile conceptions, with which the more we deal the more we are obliged to confess their impotence and uselessness. It was of such abstractions that Bacon said that their investigation remains forever without issue.

We shall be obliged to admit that there must be another sphere into which mind can enter, where the apparent contradictions are solved. That such a sphere exists, in spite of the scientific denials, all the great thinkers and poets and saints of all ages and climes unite in affirming. The ascent into this higher realm will clear up the difficulties which have been besieging us, and will give to science itself a vigor and a consistency which it never had before. We shall discover that a phenomenon is strictly correlated with a noumenon and that an object of knowledge cannot be without a corresponding subject, and that no phase of the object can be without its counterpart in the active and embracing unity of such subject. This higher realm is the fountain of all our seeing, the law-giver in the realm of the Knowable; we have overleaped the barrier, indeed taken up that very barrier into our synthesis, and find ourselves in the presence of the ever-unfolding revelation, each of whose mysteries opens its doors at our approach, admitting us into endless halls beyond. Science, now assured of itself and its methods, can proceed to grander and larger results, and will indeed become consciously and fully, as Bacon says, the handmaid of the progress of humanity. Science will no longer throw itself into antagonism with the deepest needs of the human spirit, but become reverent and subordinate to the profounder revelations of the Infinite Reason. If such results cannot be, it were better that our whole world should vanish at once and leave not a vestige behind. As for me, if such conclusions must be taken from me, I should wish to go back to some earlier stage of history, when the world was young and did not trouble itself much with thought of any kind; indeed with the Poet Wordsworth, I should exclaim:

> Great God, I'd rather be
> A pagan suckled on a creed outworn,
> So might I, standing on this pleasant lea,
> Have glimpses that would make me less forlorn;
> Have sight of Proteus rising from the sea,
> And hear old Triton blow his wreathèd horn.

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